1 QUINN EMANUEL URQUHART & SULLIVAN, LLP
   Charles K. Verhoeven (Bar No. 170151)
2   charlesverhoeven@quinnemanuel.com
   David A. Perlson (Bar No. 209502)
3   davidperlson@quinnemanuel.com
  50 California St., 22nd Floor
4 San Francisco, CA 94111
  Telephone: (415) 875-6000
5 Facsimile: (415) 875-6700

6 QUINN EMANUEL URQUHART & SULLIVAN, LLP
   Kevin P.B. Johnson (Bar No. 177129)
7   kevinjohnson@quinnemanuel.com
   Victoria F. Maroulis (Bar No. 202603)
8   victoriamaroulis@quinnemanuel.com
  555 Twin Dolphin Dr., 5th Floor
9 Redwood Shores, CA 94065
  Telephone: (650) 801-5000
10 Facsimile: (650) 801-5100

11 Attorneys for Defendants Samsung Electronics
  Co. Ltd., Samsung Electronics America, Inc., and
12 Samsung Research America, Inc.

13   UNITED STATES DISTRICT COURT

14   NORTHERN DISTRICT OF CALIFORNIA

15   SAN FRANCISCO DIVISION

16 HUAWEI TECHNOLOGIES CO., LTD., HUAWEI DEVICE USA, INC., and 17 HUAWEI TECHNOLOGIES USA, INC.,	CASE NO. 16-cv-02787-WHO
18 Plaintiffs,	**SAMSUNG'S PARTIAL MOTION TO DISMISS UNDER RULE 12(B)(6)**
19 vs.	Date: September 28, 2016 Time: 2:00 p.m.
20 SAMSUNG ELECTRONICS CO., LTD., 21 SAMSUNG ELECTRONICS AMERICA, INC., and SAMSUNG RESEARCH 22 AMERICA, INC.	Courtroom 2 The Honorable William H. Orrick
23 Defendants.	

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SAMSUNG'S PARTIAL MOTION TO DISMISS UNDER RULE 12(B)(6)

1   **TO: PLAINTIFFS AND THEIR ATTORNEYS OF RECORD**

2   **NOTICE IS HEREBY GIVEN** that on September 28, 2016, at 2:00 p.m. or such other

3   time as ordered by the above-titled Court, located at 450 Golden Gate Avenue, San Francisco, CA,

4   Defendants Samsung Elecs. Co., Ltd., Samsung Elecs. America, Inc., and Samsung Research

5   America, Inc. (collectively, "Samsung") will respectfully move the Court to dismiss two of the

6   patents-in-suit — U.S. Patent Nos. 8,416,892 and 8,644,239.

7   These two patents should be dismissed because they are invalid for claiming patent-

8   ineligible subject matter under 35 U.S.C. § 101. Specifically, they are drawn to patent-ineligible

9   mathematical formulas and contain no inventive concept above and beyond those formulas.

10   Samsung's Motion will be based on this Notice, the Memorandum of Points and Authorities set

11   forth immediately below, the Court's files, and any information of which the Court may take

12   judicial notice.

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SAMSUNG'S PARTIAL MOTION TO DISMISS UNDER RULE 12(B)(6)

MEMORANDUM OF POINTS AND AUTHORITIES

INTRODUCTION AND SUMMARY

The law has long held that mathematical formulas are not patent-eligible under 35 U.S.C. § 101, and that a patentee may not circumvent this rule by merely pairing a mathematical formula with "post-solution activity, no matter how conventional or obvious." *Parker v. Flook*, 437 U.S. 584, 590 (1978); *see also Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1303 (2012) ("the cases have endorsed a bright-line prohibition against patenting laws of nature, *mathematical formulas* and the like") (emphasis added). Among the eleven patents that the Huawei Plaintiffs assert against Samsung in this case, at least two — U.S. Patent Nos. 8,416,892 ("the '892 Patent") and 8,644,239 ("the '239 Patent") — flatly violate this rule. The '892 and '239 Patents claim nothing more than mathematical formulas paired with generic and high-level post-solution steps. The '892 Patent claims a mathematical formula for creating a specific set of "random access preambles" — a pattern of numbers — and then selecting and transmitting one of these preambles. The '239 Patent claims a mathematical formula for creating groups of "sequences" — again, patterns of numbers — such that the sequences in one group are not highly correlated with sequences in other groups.   Under the case law, such mathematics-based claims are not patent-eligible. Thus, Samsung respectfully requests that the '892 and '239 Patents be dismissed from this case.[1]

STATEMENT OF ISSUES TO BE DECIDED

1.   Do the '892 and '239 Patents claim patent-eligible subject-matter under Section 101?

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[1]   All or nearly all of Huawei's asserted patents raise issues concerning validity under § 101. Given space limitations and the fact that Huawei asserts 11 patents, Samsung focuses on only the '239 and '892 Patents in this Motion. Samsung suggests a discussion at the August 23, 2016 Case Management Conference regarding the Court's preference for addressing § 101 issues for the remaining patents.

STATEMENT OF FACTS

I.   THE '892 PATENT CONCERNS MATHEMATICALLY GENERATED NUMBER SEQUENCES

The '892 Patent (Dkt. 1, Ex. 7) is titled "Method and Apparatus of Transmitting a Random Access Preamble." Random Access Preambles (RAPs) are sequences or patterns of numbers. *Id.* at 1:64-65. RAPs are, and have long been, selected and then transmitted from mobile terminals to base stations in order to synchronize the base station with the mobile terminal. *Id.* at 1:31-35; *see also id.* at 1:36-56. The '892 Patent uses mathematical formulas to create a set of such RAPs known as "Zero-Correlation Zone (ZCZ) sequences," which obey certain mathematical parameters set forth in the '892 Patent. *Id.* at 2:31-42. Specifically, the Zero-Correlation Zone RAPs of the '892 Patent are generated using a mathematical operation known as a "cyclic shift." *Id.* at 1:64-2:7, 2:45-47 (Background section). Cyclic shifts were used for RAPs in the prior art. *Id.*

The Patent asserts, however, that the prior art had "no restriction on the values of the cyclic shift increment" used to construct RAPs. *Id.* at 3:13-14. To address this supposed shortcoming, the Patent simply imposes a mathematically-generated set of restricted cyclic shift values, as follows: 0, 13, 15, 18, 22, 26, 32, 38, 46, 59, 76, 93, 119, 167, 279, 419. *See id.* at claims 1, 10, 19, and 20. The specification recites how to mathematically derive these restricted cyclic shift values, using well-known mathematical principles and root sequences. *See id*. at 5:36-44; *see also id*. at 7:5-25 (summarizing that the restricted cyclic shift values defined in Table 1 were obtained by setting certain variables used in equations 3 and 4). Indeed, the majority of the '892 specification is devoted to mathematical equations. *See, e.g.*, *id.* at cols. 4-7.

The '892 Patent contains 20 claims. Claim 1 is illustrative:

1. A method of facilitating communication in a mobile communication system, the method comprising:

[a][2] selecting, by a user equipment (UE), a random access preamble from a set of random access preambles; and

[b] transmitting, by the UE, the selected random access preamble,

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[2]   Element identifiers ([a], [b], etc.) have been added to the claims for ease of reference.

[c] wherein the set of random access preambles is provided with Zero Correlation Zones of length N_{cs}-1, where N_{cs} is a cyclic shift increment selected from a pre-defined set of cyclic shift increments, the pre-defined set including all of the following cyclic shift increments of 0, 13, 15, 18, 22, 26, 32, 38, 46, 59, 76, 93, 119, 167, 279, 419.

As the specification acknowledges, [a] and [b] above existed in the prior art. *Id.* at 1:31-35. All [c] adds is restricting the set of Zero-Correlation Zone RAPs to a set that was derived from cyclic shift calculations based on the aforementioned defined increments: 0, 13, 15, 18, 22, 26, 32, 38, 46, 59, 76, 93, 119, 167, 279, 419. The '892 prosecution history makes clear that the "particular shift increment" claimed in the '892 claims is what supposedly differentiated those claims from the prior art. *See* 11.07.12 Interview Summary (Ex. A)[3] ("Applicant discussed differences between the invention and the prior art, notably the limitation, cyclic shift increment selected from a set of cyclic shift increments 0, 13, 15, 18, and so on (16 increments in all). The applicant argued that this particular shift increment is not disclosed by the AAPA [Applicant's Admitted Prior Art].")

Independent claim 10 essentially casts method claim 1 as an apparatus claim. Independent claims 19 and 20 merely add receiving the RAP calculated as in 1[c] and estimating the time of arrival. The dependent claims just provide various algorithmic details on how to calculate the set of RAPs. For example, claims 2 and 11 require that the set of RAPs be calculated from root sequences, claims 3 and 12 require that the root sequences be Zadoff-Chu sequences, and claims 8 and 17 give specific mathematical formulas for performing the claimed cyclic shifts to generate the RAPs.

II.   THE '239 PATENT CLAIMS A MATHEMATICAL FORMULA FOR GROUPING NUMBERS

The '239 Patent (Dkt. 1, Ex. 13) is titled "Method and Apparatus for Allocating and Processing Sequences in Communication System." Sequences, which are merely patterns of numbers generated by a mathematical formula, are and have long been used for modulation and transmission of cell signals. '239 Patent at 1:41-67, 2:15-55. The '239 Patent acknowledges that

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[3] All prosecution history excerpts are attached as Exhibits to this Motion for the Court's convenience.

1   many such sequences were known in the prior art. "Taking the Zadoff-Chu sequence as an

2   example, the generation mode or expression of a Zadoff-Chu sequence is as follows:"

3

$$a_{r,N}(k) = \begin{cases} \exp\left[-\dfrac{j2\pi \cdot r}{N}\left(q \cdot k + \dfrac{k \cdot (k+1)}{2}\right)\right] & N \text{ is an odd number,} \\ & k = 0, 1, \ldots, N-1 \\ \exp\left[-\dfrac{j2\pi \cdot r}{N}\left(q \cdot k + \dfrac{k^2}{2}\right)\right] & N \text{ is an even number,} \\ & k = 0, 1, \ldots, N-1 \end{cases} \qquad \text{Formula (1)}$$

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8   *Id.* at 2:17-29 (Background section). The specification further notes that "[a] formula for

9   generating a Gauss sequence is:"

10

$$b_{\alpha_l, \alpha_{l-1}, \ldots, \alpha_0}(n) = \exp(-2\pi j(\alpha_l n^l + \alpha_{l-1} n^{l-1} + \ldots + \alpha_0)), \qquad \text{Formula (2)}$$
$$n = 0, 1, 2, \ldots, N$$

11

12   *Id.* at 7:2-4.

13   The '239 Patent uses a mathematical formula to generate groups of sequences that are *non-*

14   *correlated* with each other, and then allocates each group of such sequences to a different cell,

15   user, or channel. *See id.* at Abstract. The Patent Abstract explains that the creation of non-

16   correlated sequence groups constitutes the alleged advancement and utility of the invention, as it

17   "reduc[es] interference" and "avoid[s] the trouble of storing the lists of massive sequence groups."

18   *Id.* Like the '892 Patent, the vast majority of the specification is devoted to mathematical

19   equations for creating these non-correlated sequence groups, including pages worth of

20   specification text consisting almost exclusively of mathematical equations. *See, e.g.*, *id.* at cols.

21   15-19.

22   The Patent contains 23 claims. Claim 1 is exemplary:

23   **1.** A method for allocating sequences in a communication system, comprising:

24   [a] dividing, by a communication system, sequences in a sequence group into
          multiple sub-groups, each sub-group corresponding to a mode of occupying time
          frequency resources;

25

26   [b] selecting, by the communications system, a sequence from a candidate sequence
          collection corresponding to each sub-group to form the sequences in the sub-group
          by:

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28   [b1] selecting, by the communication system, n sequences in the candidate
          sequence collection to form sequences in a sub-group i in a sequence group k,

wherein n is a natural number, i is a serial number of the sub-group, k is a serial number of the sequence group,

[b2] determining by the communication system, a value of a basic sequence index r_i in the sub-group i in the sequence group k, the value of r_i; is at least one of [k * N_i/N_1], [k * N_i/N_1], [k * N_i/N_1] +1 and [k * N_i/N_1] -1, wherein N_i is a length of a sequence in the candidate sequence collection, N_1 is a length of a reference sub-group sequence;

[c] allocating, by the communication system, the sequence group to at least one of: a base station, a cell, a user equipment and a channel.

So in sum, step [a] divides a sequence group into sub-groups. Step [b] selects the sequences that should "form the sequences in the sub-group," by selecting "n" sequences in step [b1] and then performing the mathematical calculations set forth in step [b2]. Finally, step [c] allocates the sequence group "to at least one of: a base station, a cell, a user equipment and a channel."

Independent claim 6 is substantially similar to claim 1, but adds a step of communicating according to the sequences in that group. Independent claims 12 and 17 merely cast the method of claim 1 as a "communication system" and "sequence processing apparatus," respectively. Dependent claims 2, 7, 13, and 18 recite that the claimed sequences correspond to Zadoff-Chu or Gauss sequences — two well-known types of sequences discussed in the background of the specification. Dependent claims 3, 8, 14, and 19 further limit what number can be used for the "n" sequences selected in the independent claims. Dependent claims 4-5, 9-10, 15-16, and 20-21 provide further specificity on the calculations recited in claim 1[b2] (and the identical calculations recited in the other independent claims). Finally, dependent claims 11 and 22-23 recite that the cell, base station, or other cellular unit both transmit and receive according to the sequences that have been assigned to it.

LEGAL STANDARD

35 U.S.C. § 101 states: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." *Id.* However, "[w]e have long held that this provision contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable." *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014).

The Supreme Court's *Alice* opinion endorsed a two-step analysis for determining whether patent claims fall within one of those patent-ineligible exceptions. The first step is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." *Id.* at 2355. "If so, we then ask, '[w]hat else is there in the claims before us?'" *Id.* "We have described step two of this analysis as a search for an 'inventive concept' — *i.e.,* an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself." *Id.* (alteration in original) (internal quotation marks omitted).

The Federal Circuit has made clear that patent-eligibility under § 101 can — and often *should* — be decided through motions to dismiss under Rule 12(b)(6). *In re TLI Comm'ns LLC Patent Litig.*, 823 F.3d 607, 615 (Fed. Cir. 2016) (affirming Rule 12(b)(6) dismissal under Section 101); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1349 (Fed. Cir. 2015) (same); *OIP Tech., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1364 (Fed. Cir. 2015) (same); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 723 (Fed. Cir. 2014) (same). As Federal Circuit Judge Mayer explained in *OIP Tech.*: "Failure to recite statutory subject matter is the sort of 'basic deficiency,' that can, and should, 'be exposed at the point of minimum expenditure of time and money by the parties and the court.' . . . Accordingly, where, as here, asserted claims are plainly directed to a patent ineligible abstract idea, we have repeatedly sanctioned a district court's decision to dispose of them on the pleadings." *OIP Tech.*, 788 F.3d at 1364-65 (Mayer, J., concurring); *see also id.* at 1365 ("I commend the district court's adherence to the Supreme Court's instruction that patent eligibility is a 'threshold' issue, by resolving it at the first opportunity.") (internal citation omitted). Because patent-eligibility should often be decided at the pleadings stage, the Federal Circuit has also made clear that eligibility determinations do not need to be deferred until after claim construction. *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1373-74 (Fed. Cir. 2016) ("In many cases, too, evaluation of a patent claim's subject matter eligibility under § 101 can proceed even before a formal claim construction.").

ARGUMENT

I.   THE '892 CLAIMS ARE INELIGIBLE UNDER SECTION 101

    A.   *Alice* Step 1: the '892 Claims Are Directed to an Abstract Mathematical Formula

    The "directed to" inquiry applies a stage-one filter to the claims, considered in light of the specification, based on whether "their character as a whole is directed to excluded subject matter." *Internet Patents,* 790 F.3d at 1346. Here, the '892 claims are directed to an abstract mathematical formula for generating specific sets of Zero-Correlation Zone RAPs, as set forth in step 1[c]:

    the set of random access preambles is provided with Zero Correlation Zones of length N_{cs}-1, where N_{cs} is a cyclic shift increment selected from a pre-defined set of cyclic shift increments, the pre-defined set including all of the following cyclic shift increments of 0, 13, 15, 18, 22, 26, 32, 38, 46, 59, 76, 93, 119, 167, 279, 419.

    The specific cyclic shift values claimed in the '892 Patent are what constitute the supposed advance of the Patent over the prior art. '892 Patent at 3:9-14 ("It is proposed in the [prior art] that[] the cyclic shift increment value N_{cs} in the cell was proposed to be signalled [sic] to the UE *but there was no restriction on the values of the cyclic shift increment*") (emphasis added); *id.* at 3:14-18 (explaining how another prior art reference "is to have 11 values of N_{cs} *without specification how to select the values*.") (emphasis added); 11.07.12 Interview Summary (Ex. A) ("The applicant argued that this particular shift increment is not disclosed by the AAPA [Applicant's Admitted Prior Art].").[4]   The fact that this math is the supposed advancement over the prior art confirms that the '892 Patent is "directed to" mathematics at *Alice* step 1. *Genetic Techs.,* 818 F.3d at 1375-76 (inquiry at Step 1 looks at "the focus of the claimed advance over the prior art.")

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    [4]   The Court may take judicial notice of USPTO public records, such as the file history of the '892 Patent's application. *See, e.g.*, *St. Clair Intellectual Prop. Consultants, Inc. v. Canon Inc.*, 412 F. App'x 270, 275 n.1 (Fed. Cir. 2011) ("[T]his court can take judicial notice of the reexamination record."); *Classen Immunotherapies, Inc. v. Shionogi, Inc.*, 993 F.Supp. 2d 569, 580 n.10 (D. Md. 2014) ("The Court may consider public records of these patents' prosecution history as documents appropriate for judicial notice."); *Coinstar, Inc. v. Coinbank Automated Sys., Inc.*, 998 F.Supp. 1109, 1114 (N.D. Cal. 1998) (granting request for judicial notice of two patents and documents from the file history of one of the patents); Fed. R. Evid. 201.

1   But calculating a specific set of cyclic shift values — a set of numbers — is a

2 quintessential non-patentable abstract idea. As the Supreme Court has stated, "the cases have

3 endorsed a bright-line prohibition against patenting laws of nature, mathematical formulas and the

4 like." *Mayo*, 132 S. Ct. at 1303; *see also Diamond v. Diehr*, 450 U.S. 175, 186 (1981) ("an

5 algorithm, or mathematical formula, is like a law of nature, which cannot be the subject of a

6 patent."); *Flook*, 437 U.S. at 595 ("if a claim is directed essentially to a method of calculating,

7 using a mathematical formula, even if the solution is for a specific purpose, the claimed method is

8 nonstatutory") (citation omitted); *Digitech Image Techs. v. Elecs. For Imaging, Inc.*, 758 F.3d

9 1344, 1351 (Fed. Cir. 2014) ("Without additional limitations, a process that employs mathematical

10 algorithms to manipulate existing information to generate additional information is not patent

11 eligible.") (citing *Flook*, 437 U.S. at 595); *Synopsys, Inc. v. Mentor Graphics Corp.*, 78 F. Supp.

12 3d 958, 963 (N.D. Cal. 2015) (holding that "various algorithms for determining the hardware

13 components and layout of an IC [integrated circuit]" are directed to an unpatentable abstract idea);

14 *Compression Tech. Sols. LLC v. EMC Corp.*, No. C-12-01746 RMW, 2013 WL 2368039, at *4

15 (N.D. Cal. May 29, 2013) ("A patent may not simply restate laws of nature or abstract ideas (*e.g.,*

16 mathematical formulas . . .), or apply them in some rudimentary fashion[.]").

17   The generic post-solution steps of simply selecting one of those RAPs and transmitting it

18 (in steps 1[a] and 1[b]) do not alter this conclusion, as they were well-known in the art already, as

19 the specification demonstrates. Statement of Facts § I, *supra*; *cf. TLI*, 823 F.3d at 614 ("[H]ere we

20 need to only look to the specification, which describes the telephone unit and server as either

21 performing basic computer functions such as sending and receiving data, or performing functions

22 'known' in the art."). Such conventional post-solution activity does not render a mathematical

23 formula patent-eligible. *Flook*, 437 U.S. at 590 ("The notion that post-solution activity, no matter

24 how conventional or obvious in itself, can transform an unpatentable principle into a patentable

25 process exalts form over substance."); *Thales Visionix, Inc. v. United States*, 122 Fed. Cl. 245, 252

26 (Fed. Cl. 2015) (claims directed to a mathematical equation for determining relative position

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SAMSUNG'S PARTIAL MOTION TO DISMISS UNDER RULE 12(B)(6)

1   combined with conventional sensors elements failed *Alice* step 1).[5] The same conclusion holds for

2   independent claims 19 and 20, which recite the generic post-solution steps of receiving the RAP

3   and/or calculating a time of arrival, also well-known in the art. '892 Patent at 1:52-59. All these

4   claims are thus directed to an abstract idea under *Alice* step 1 — namely, providing a set of Zero-

5   Correlation Zone RAPs by applying specific, prescribed cyclic shift values.

6   **B.**   **_Alice_ Step 2: the '892 Claims Do Not Contain Any Inventive Concept**

7   The '892 claims do not contain any "inventive concept" beyond the claimed abstract idea

8   that could impart patent-eligibility at *Alice* step 2. For example, merely "selecting" a given RAP

9   was a well-known concept ('892 Patent at 1:33-35), not an inventive one. *Ultramercial*, 772 F.3d

10 at 714 ("selecting an ad after consulting an activity log" does not impart patent-eligibility); *Netflix,*

11 *Inc. v. Rovi Corp.*, 114 F. Supp. 3d 927, 942 (N.D. Cal. 2015) ("using selectable categories to

12 filter search results" does not impart patent-eligibility). And the Federal Circuit has made clear

13 that "transmitting" and "receiving" a selected RAP — *i.e.*, merely "sending and receiving data" —

14 cannot be an inventive concept either. *TLI*, 823 F.3d at 614 ("basic computer functions such as

15 sending and receiving data" do not impart patent-eligibility); *Cyberfone Sys., LLC v. CNN*

16 *Interactive Grp., Inc.*, 558 F. App'x 988, 992 (Fed. Cir. 2014) ("[U]sing categories to organize,

17 store, and transmit information is well-established.")

18   Nor do any of the other claims add an inventive concept at *Alice* step 2. While claims 19

19 and 20 recite calculating the time of arrival for the RAP, this too is just an abstract mathematical

20 calculation, and is also acknowledged as a conventional activity in the Background section of the

21 '892 specification. '892 Patent at 1:52-56. Because the specification itself states that this

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23   [5] Huawei may point to the Federal Circuit's recent decision in *Enfish, LLC v. Microsoft*

24 *Corp.*, 822 F.3d 1327 (Fed. Cir. 2016), but that case is no help to Huawei for the '892 Patent (or
    for the '239 Patent for the same reasons). *Enfish* held that an innovative software process

25 (namely, the creation of a self-referential database) was not an abstract idea at *Alice* step 1. *Id.* at
    1336. The *Enfish* claims were not directed to a mathematical formula. *Id.* at 1338. Indeed, *Enfish*

26 explicitly distinguished patent-eligible software processes from "the patent-ineligible claims at
    issue in other cases [which] recited use of an abstract mathematical formula on any general

27 purpose computer or recited a purely conventional computer implementation of a mathematical
    formula." *Id.* (citing *Flook*, 437 U.S. at 594 and *Gottschalk v. Benson*, 409 U.S. 63 (1972)).

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1   technique is conventional, it cannot be an inventive concept as a matter of law. *Internet Patents*,

2   790 F.3d at 1348 (where specification describes a given technique as "conventional," such

3   technique cannot supply an inventive concept under *Alice* step 2).

4   Finally, while the dependent claims add numerous mathematical details about how the set

5   of Zero-Correlation Zone RAPs is generated, adding mathematical details for how to generate an

6   formula cannot constitute an inventive concept. It simply results in a more complex — but

7   equally unpatentable — mathematical formula. *Diehr*, 450 U.S. at 204 ("the [*Flook*] Court

8   explained the correct procedure for analyzing a patent claim employing a mathematical algorithm.

9   Under this procedure, the algorithm is treated for § 101 purposes as though it were a familiar part

10   of the prior art; the claim is then examined to determine whether it discloses 'some *other* inventive

11   concept.'") (emphasis added); *see also Perfect Web Techs., Inc. v. Infousa, Inc.*, No. 07-80286-

12   CIV, 2008 WL 6153736, at *10 (S.D. Fla. Oct. 27, 2008) ("[T]he Federal Circuit has held that a

13   process that combines algorithms is no more patentable than any of the algorithms standing

14   alone.")

15   Because the '892 claims are directed to a mathematical formula for providing a set of

16   Zero-Correlation Zone RAPs according to specific cyclic shift values, and because the claims

17   contain no "inventive concept" above and beyond the formula itself, these claims are not patent-

18   eligible under § 101.

19   **II.   THE '239 CLAIMS ARE INELIGIBLE UNDER SECTION 101**

20   **A.   *Alice* Step 1: The '239 Claims Are Directed to an Abstract Mathematical
              Formula**

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22   The '239 Patent claims are directed to creating groups of sequences that are not highly

23   correlated with each other. The claims recite that this is done by parsing numbers into discrete

24   groups, such that the numbers in one group are not highly correlated with the numbers in the other

25   groups. This includes "dividing" sequences into groups and sub-groups (claim 1[a]), "selecting" a

26   certain number of sequences in each group (claim 1[b1]), and "determining" index values for these

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sequences according to a specified formula (claim 1[b2]).[6] Sequences are just patterns of

numbers, so the creation of non-correlated sequence groups in the claims — *i.e.*, the creation of

non-correlated strings of numbers — is pure mathematics. Showing that the '239 Patent is

directed to this math, the '239 Patent explains that its mathematics constitute the alleged

advancement and utility of the invention, to which nearly the entire specification is devoted.

Statement of Facts § I, *supra*; *cf. Genetic Techs.,* 818 F.3d at 1375-76.

As explained above, such mathematical calculations are quintessential "abstract ideas"

under *Alice* step 1. *Mayo*, 132 S. Ct. at 1303; *Diehr*, 450 U.S. at 186; *Flook*, 437 U.S. at 595.

Thus, a formula for dividing numerical sequences into non-highly-correlated groups — as claimed

in the '239 Patent — is an abstract idea that is non-patentable.

There is nothing beyond the claimed mathematical formula that makes the claims directed

to anything else. The final claim 1 step is "allocating" each sequence group to a base station, cell,

user equipment, or channel. But allocating sequence elements to multiple pieces of cellular

equipment is a conventional technique, as acknowledged in the Background section of the '239

Patent. '239 Patent at 1:55-58 ("in a Single Carrier Frequency Division Multiple Access (SC-

FDMA) system, within a symbol time, the elements of the CAZAC sequence are transmitted

sequentially on multiple sub-carriers."); *see also id.* at 5:9-11 ("FIG. 2 shows the conventional art

where the sequences transmitted by different cells occupy partially overlapped time frequency

resources and have different lengths"). Thus, as with the conventional steps in the '892 claims,

this conventional "allocating" step from the '239 claims is at most the type of conventional "post-

solution" activity that does not elevate a mathematical-formula claim above an unpatentable

abstract idea. *Flook*, 437 U.S. at 590; *TLI*, 823 F.3d at 614; *Thales*, 122 Fed. Cl. at 255.

The same is true for the other '239 claims, which do no more than recite "communicating"

according to the assigned sequence groups, including "sending" and "receiving" these sequences.[7]

---

[6] The other independent '239 claims recite substantially identical steps for creating these non-correlated sequence groups.

[7] *See, e.g.*, claim 6 ("communicating, by the cell or the base station or the user equipment, according to the sequences on time frequency resources corresponding to the sub-group i"); claim

1   This too is just "conventional" post-solution activity occurring after the creation of the sequence

2   groups themselves. As the '239 Patent itself makes clear: "FIG. 2 shows the *conventional* art

3   where the *sequences transmitted by different cells* occupy partially overlapped time frequency

4   resources and have different lengths" *Id.* at 5:9-11 (emphasis added). Likewise, the Examiner

5   during prosecution of the '239 Patent recounted a laundry list of prior art references that discussed

6   allocating sequence groups to different cells and communicating via those sequences. *See* 1.25.13

7   Office Action at 4-5 (Ex. B) (summarizing prior art references that disclose "transmitting data

8   using code sequence expanded through grouping", "transmission of plurality of sequences",

9   "sequence allocation to users of different cells", "assignment of sequences to users in a group of

10   cells", etc.).

B.   *Alice* Step 2: the '239 Claims Do Not Contain Any Inventive Concept

12   Turning to *Alice* step 2, the asserted clams do not contain any "inventive concept"

13   sufficient to impart patent-eligibility. To the contrary, every claimed action or element (beyond

14   the mathematical calculation steps themselves) is utterly generic and high-level, and thus cannot

15   supply an inventive concept.

16   For example, as discussed above, claim 1 requires "allocating, by the communication

17   system, the sequence group to at least one of: a base station, a cell, a user equipment and a

18   channel." But merely allocating data within a cellular communication system is not an inventive

19   concept. By analogy, the Federal Circuit recently held that "classifying and storing digital images

20   in an organized manner . . . in a telephone system" did not constitute an inventive concept. *TLI*,

21   823 F.3d at 615. Moreover, the claimed "base station," "cell," "user equipment," and "channel"

22   are all conventional elements in a cellular communications network. Such "generic computer

23   components [are] insufficient to add an inventive concept to an otherwise abstract idea." *Id.* at

24   614.

25

26   11 ("sending, by the cell or the base station or the user equipment, the sequences on time
     frequency resources corresponding to the sub-group i; and receiving, by the cell or the base station
27   or the user equipment, the sequences on time frequency resources corresponding to the sub-group
     i.")
28

SAMSUNG'S PARTIAL MOTION TO DISMISS UNDER RULE 12(B)(6)

1   The claims that recite communicating according to the sequence groups assigned for each

2 cellular element — including "sending" and "receiving" these sequences[8] — likewise do not recite

3 an inventive concept. As noted above, "basic computer functions such as sending and receiving

4 data" do not impart patent-eligibility. *TLI*, 823 F.3d at 614.; *see also Cyberfone*, 558 F. App'x at

5 992. And the '239 Patent makes clear that communicating according to sequence groups was a

6 "conventional" technique in the prior art. '239 Patent at 5:9-11 ("FIG. 2 shows the conventional

7 art where the sequences transmitted by different cells occupy partially overlapped time frequency

8 resources and have different lengths"). Here too, because the specification itself states that this

9 technique is conventional, it cannot be an inventive concept as a matter of law. *Internet Patents*,

10 790 F.3d at 1348.

11   Finally, the elements recited in the various dependent claims simply provide additional

12 mathematical specificity on how to calculate the groups of non-correlated sequences. But

13 mathematical formulas are abstract ideas, and these dependent limitations merely refine and

14 augment the mathematical formulas recited in the independent claims. An "inventive concept"

15 under *Alice* step 2 must be something other than the formula itself, no matter how mathematically-

16 detailed the formula might be. *Diehr*, 450 U.S. at 204.

17   Because the '239 claims are directed to a mathematical formula for creating groups of non-

18 correlated sequences, and because the claims contain no "inventive concept" above and beyond

19 the algorithm itself, these claims are not patent-eligible under Section 101.

20   **CONCLUSION**

21   For the foregoing reasons, Samsung respectfully requests that the '892 and '239 Patents be

22 dismissed from this case.

23

24   _____

25   [8] *See, e.g.*, claim 6 ("communicating . . . according to the sequences on time frequency resources corresponding to the sub-group i"); claim 11 ("sending . . . the sequences on time frequency resources corresponding to the sub-group i; and receiving . . . the sequences on time

26 frequency resources corresponding to the sub-group i.") The mere notion of conducting cellular communications "on time frequency resources" does not supply an inventive concept either, since

27 the Background section of the '239 Patent admits that using time frequency resources for cellular communications was a conventional technique. *See generally* '239 Patent at col. 3.

28

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2   QUINN EMANUEL URQUHART &
                                               SULLIVAN, LLP
3

4
                                               By   /s/ Victoria F. Maroulis
5   Charles K. Verhoeven
                                                     Kevin P.B. Johnson
6   Victoria F. Maroulis
                                                     David A. Perlson
7
                                                     Attorneys for Samsung Electronics Co., Ltd.,
8   *Samsung Electronics America, Inc., and Samsung*
                                                     Research America, Inc..
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Case No. 16-cv-02787-WHO
SAMSUNG'S PARTIAL MOTION TO DISMISS UNDER RULE 12(B)(6)